

WHAT IS CLAIMED IS:

1 1. An internal combustion engine comprising a variable
2 compression ratio mechanism operable during an intake
3 stroke to change an actual compression ratio of the engine,
4 the engine being capable of correcting an amount of fuel
5 injected into the engine in response to a change in the
6 compression ratio.

1 2. An internal combustion engine according to Claim 1,
2 wherein the amount of fuel injected into the engine is
3 corrected so as to increase with decrease in the compression
4 ratio.

1 3. An internal combustion engine according to Claim 1,
2 wherein the amount of fuel injected into the engine is
3 corrected so as to decrease with increase in the compression
4 ratio.

1 4. An internal combustion engine according to Claim 1,
2 wherein the engine sets a correction value in accordance with
3 an engine speed and a compression ratio control speed to
4 correct the amount of fuel injected into the engine based on
5 the correction value.

1 5. An internal combustion engine according to Claim 1,
2 wherein the engine sets a correction value in accordance with
3 an engine speed and a deviation between the actual compression
4 ratio and a target compression ratio to correct the amount
5 of fuel injected into the engine based on the correction value.

1 6. An internal combustion engine according to Claim 1,
2 wherein the engine corrects the amount of fuel injected into
3 the engine when an engine speed is lower than or equal to a
4 first given value and a compression ratio control speed is
5 higher than or equal to a second given value.

1 7. An internal combustion engine according to Claim 6,
2 wherein the engine sets a correction value in accordance with
3 the compression ratio control speed to correct the amount of
4 fuel injected into the engine based on the correction value.

1 8. An internal combustion engine according to Claim 1,
2 further comprising:

3 a cylinder having an intake port;
4 a fuel injection valve to inject fuel into the intake
5 port of the cylinder during an exhaust stroke and the intake
6 stroke, the fuel being injected in a first fuel amount during
7 the exhaust stroke and in a second fuel amount during the
8 intake stroke; and

9 a control module to control the fuel injection valve
10 so as to correct the second fuel amount in response to the
11 change in the compression ratio.

1 9. An internal combustion engine comprising a variable
2 compression ratio mechanism operable during an intake
3 stroke to change an actual compression ratio of the engine,
4 the engine being capable of regulating a compression ratio
5 control speed of the variable compression ratio mechanism.

1 10. An internal combustion engine according to Claim 9,
2 wherein the engine sets a regulation value in accordance with

3 an engine speed and a deviation between the actual compression
4 ratio and a target compression ratio to regulate the
5 compression ratio control speed based on the regulation value.

1 11. A control method for an internal combustion engine,
2 comprising:

3 operating a variable compression ratio mechanism of the
4 engine to change an actual compression ratio;
5 allowing a fuel injection valve of the engine to inject
6 fuel into the engine during exhaust and intake strokes; and
7 controlling the fuel injection valve so as to correct
8 the amount of fuel injected into the engine during the intake
9 stroke in response to a change in the compression ratio.

1 12. A control method according to Claim 11, wherein the
2 amount of fuel injected into the engine during the intake
3 stroke is corrected so as to increase with decrease in the
4 compression ratio and decrease with increase in the
5 compression ratio.

1 13. A control method according to Claim 11, wherein said
2 controlling comprises setting a correction value in
3 accordance with an engine speed and a compression ratio
4 control speed to correct the amount of fuel injected into the
5 engine during the intake stroke based on the correction value.

1 14. A control method according to Claim 11, wherein said
2 controlling comprises setting a correction value in
3 accordance with an engine speed and a deviation between the
4 actual compression ratio and a target compression ratio to
5 correct the amount of fuel injected into the engine during

6 the intake stroke based on the correction value.

1 15. A control method according to Claim 11, wherein said
2 controlling comprises:

3 determining whether an engine speed is lower than or
4 equal to a first given value and a compression ratio control
5 speed is higher than or equal to a second given value; and
6 when the engine speed is lower than or equal to the first
7 given value and the compression ratio control speed is higher
8 than or equal to the second given value, setting a correction
9 value in accordance with the compression ratio control speed
10 to correct the amount of fuel injected into the engine during
11 the intake stroke based on the correction value.

1 16. A control method for an internal combustion engine,
2 comprising:

3 operating a variable compression ratio mechanism of the
4 engine to change an actual compression ratio; and
5 regulating a compression ratio control speed of the
6 variable compression ratio mechanism in response to a change
7 in the compression ratio.

1 17. A control method according to Claim 16, wherein said
2 regulating comprises setting a regulation value in accordance
3 with an engine speed and a deviation between the actual
4 compression ratio and a target compression ratio to regulate
5 the compression ratio control speed based on the regulation
6 value.